**Honeywell**

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Connected Utilities

# evoQ$_4$ Outputs

## evoQ$_4$ Pulse Output Module

### Operation

The evoQ$_4$ pulse module provides a reliable output communication for connection to all common data management devices, including data-loggers, AMR/I and SCADA systems. The pulse unit is self powered using its own batteries and does not affect the meter life.

Communication between the meter and the pulse module is via an infra-red LED and an optical sensor. A rubber grommet maintains a clear pathway.

### Installation

The pulse unit can be fitted at any time to the evoQ$_4$ meter, either pre-shipment or in-the-field. Simply connect the pulser to the meter for instant functionality. The unit is fully hermetically sealed and is suitable for use in flooded pits up to a water depth of 30 feet. See evoQ$_4$ installation operation manual for details.

### Pulse output

The evoQ$_4$ pulser features a dual channel, bi-directional capable pulse output and alarm indicator.
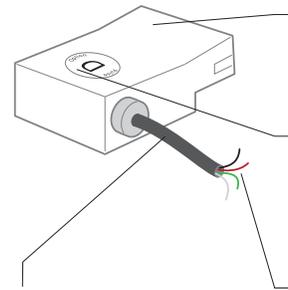
### Alarm[1]

The alarm output channel can provide an output signal to indicate:
• Meter low battery
• Pulser low battery
• Measurement stopped / No water
• Tamper (pulser removed from meter)

| SPECIFICATIONS | |
|---|---|
| Operating temperature | 15 ºF to 120 ºF, -10 ºC to +55 ºC |
| Pulse output signal | Open drain NPN current sink |
| Maximum load current | 20mA |
| Maximum load voltage | 30V DC |
| Power | Battery powered, 10 years |
| Maximum pulse transmitter distance | 200 meters, 650 feet |
| Standard cable length | 10 meters (30 ft), 30 meters optional (98 ft) |
| Environmental rating | IP 68 / NEMA 6P |
| Dimensions (mm, in) | H 35 x W 55 x D 70, 1.4" x 2.2" x 2.75" |
| Weight | 17oz, approx. 500 grams with 10m cable (30ft) |
| Minimum pulse width | 100ms ± 10ms |

**Pulser**

The evoQ$_4$ pulser is fully sealed, IP68 unit suitable for installation in flooded environments.

Pulse option label denotes the pulse configuration of the unit (see table below).

A4-wire outputs:
Red – Pulse channel 1
White – Pulse channel 2
Black – Alarm output*
Green – Common..

Robust communication cable in standard 10m (30 ft) length; 30m (98ft) version is also available.

| PULSE OUTPUT OPTIONS | | | | | |
|---|---|---|---|---|---|
| Wire color | Red | White | Black | Green | |
| Function | Channel 1 | Channel 2 | Alarm | Common / Ground | |
| Pulse option label | Pulse weight | | | | Note |
| F | 1 USG / 0.1 Cuft / 1 L | 1 USG / 0.1 Cuft / 1 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| K | 10 USG / 1 Cuft / 10 L | 10 USG / 1 Cuft / 10 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| M | 100 USG / 10 Cuft / 100 L | 100 USG / 10 Cuft / 100 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| P | 1000 USG / 100 Cuft / 1000 L | 1000 USG / 100 Cuft / 1000 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| G | 1 USG / 0.1 Cuft / 1 L | 10 USG / 1 Cuft / 10 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| D* | 10 USG / 1 Cuft / 10 L | 100 USG / 10 Cuft / 100 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| L | 10 USG / 1 Cuft / 10 L | 1000 USG / 100 Cuft / 1000 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| N | 100 USG / 10 Cuft / 100 L | 1000 USG / 100 Cuft / 1000 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| H | 1 USG / 0.1 Cuft / 1 L | 100 USG / 10 Cuft / 100 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| J | 1 USG / 0.1 Cuft / 1 L | 1000 USG / 100 Cuft / 1000 L | Alarm | Common / Ground | Net total (Fwd - Rev); Net total (Fwd - Rev) |
| E | 1 USG / 0.1 Cuft / 1 L | Direction Flag | Alarm | Common / Ground | Ch1 Pulse Fwd AND Rev; Ch2 Direction flag |
| B | 1 USG / 0.1 Cuft / 1 L | 1 USG / 0.1 Cuft / 1 L | Alarm | Common / Ground | Ch1 Pulse Fwd; Ch2 Pulse Rev |
| S | | | | | Non Standard Configuration |

1. Standard configuration if no pulse weight specified
Fwd - Rev: Forward pulses net of any reverse flow using compensation method internal to pulse module
Fwd AND Rev: Forward and Reverse pulses (direction flag outputs high state on forward flow) Users should check compatibility with electrical requirements of data loggers, SCADA systems, PLC etc.

## evoQ₄ Electromagnetic Meter
**evoQ$_4$ Electromagnetic Meter**
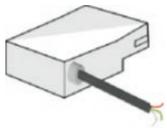**Elster Protocol Encoder Module**

### Operation

The evoQ$_4$ electronic water meter offers users flexibility in output choices. The modular design of the output interface allows utilties to easily retrofit meters to upgrade from direct reading or switch among different output modules. The Elster protocol encoder module is appropriate for interface where Honeywell mechanical water meters using InvisionTM Encoder register connected the meter to the utility Automatic Meter Reading system or Automated Metering Infrastructure. Touch reading via inductive pads is supported as well. Upgrading from Touch reading to AMR does not require a module change.

The module operates via optical interface with the evoQ$_4$ register output. The meter register and the potted encoder module remain fully protected from water ingress, retaining the outstanding reliability inherent to the evoQ$_4$ product line. The electronic register information is decoded by the encoder and translated to the ASCII standard frame message. Endpoints and interogation devices obtain the reading through normal transmission processes.

Optional connection variants include bare wire with field splice kits for indoor or submerged locations, Nicor Connector, or Itron In-Line Connector™.
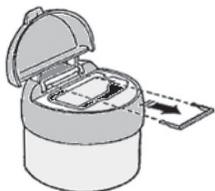
### Generic Wire Diagram:
Red: Data
White: V+ (power)
Black: V0 (ground)

| SPECIFICATIONS | |
|---|---|
| Protocol | Elster K frame |
| Encoded digits | 6 most significant |
| Encoder ID. | 10 digit fixed |
| Power source. | Lithium battery (10 yr) |
| Environmental rating (with appropriate splice kit) | NEMA 6P / IP68 |
| Cable lengths (bare wire) | 30 feet, 90 feet |
| Optional connectors (25') | Itron In Line Connector™ Nicor Connector™ |
| Compatibility | Honeywell EnergyAxis® MegaNet™ Enc MTU Itron™ 60W, 60W-R, 200W, 100W Datamatic™Firefly, MOSAIC Others, contact AMI provider tech support |
| Materials module | ABS Resin 3 conductor AWG 22 cable |

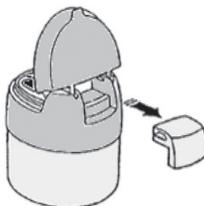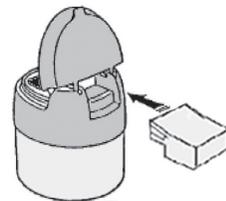| | |
|---|---|
| Six digit resolution | 1000 US Gallons 100 Cubic Feet 1 Cubic Meter |

## INSTALLATION

Lift the lid, using a small screwdriver blade, carefully remove the pulser clip.

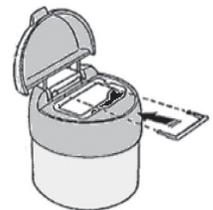Remove the blank cover by lifting up…

…and then slide out.

Fit the Encoder unit in the opposite manner to the cover removal.

Replace the securing clip (lugs uppermost).

**Warning:** Take care not to dislodge the rubber gasket on the underside of the unit when fitting / removing.
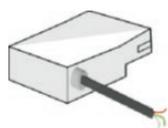
# evoQ₄ Electromagnetic Meter
## Sensus Encoder Module

### Operation

The Honeywell AMCO Water evoQ₄ Sensus Protocol encoder module is designed for use with 3 wire radio endpoints. The 3 wire to 2 wire adapter module is necessary to allow the encoder to interface with 2 wire endpoints such as wall or pit pads for touch reading or AMR devices that utilize a 2 wire coupler integrated into the radio module.

The encoder reading is obtained through the normal means of interrogation of the reading point via radio endpoint.

The Sensus (also called V frame) protocol is transmitted from the encoder module and reported to the interrogating device.

Reading resolution is determined by the version of Sensus protocol encoder module used and the programming set in the handheld. Either 6 digit or 8 digit reads are transmitted.
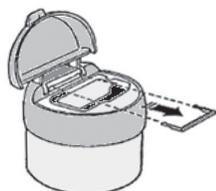
Generic Wire Diagram:
Red:      Data
White:   V+ (power)
Black:   VO (ground)

| SPECIFICATIONS | |
|---|---|
| Protocol | Sensus V frame |
| Encoded digits | v_6 -6 most significant<br>v_8-8 most significant |
| Encoder ID. | 10 digit fixed |
| Power source. | Lithium battery (10 yr) |
| Environmental rating (with appropriate splice kit) | NEMA 6P / IP68 |
| Cable lengths (bare wire) | 30 feet, 90 feet |
| Optional connectors (25') | Itron In Line Connector™<br>Nicor Connector™ |
| Compatibility | Honeywell EnergyAxis®<br>MegaNet™ Enc MTU<br>Itron™ 60W, 60W-R, 200W, 100W<br>Datamatic™Firefly, MOSAIC<br>Others, contact AMI provider tech support |
| Materials module | ABS Resin<br>3 conductor AWG 22 cable |

| | |
|---|---|
| Six digit resolution | 1000 US Gallons<br>100 Cubic Feet<br>1 Cubic Meter |
| Eight digit resolution | 10 US Gallons<br>1 Cubic Foot<br>1 Liter |

| evoQ₄ Size and Units | 1.5"-4" USG | 6"-12" USG | 1.5"-4" CuFt | 6"-12" CuFt | 1.5"-4" M³ | 6"-12" M³ |
|---|---|---|---|---|---|---|
| **Resolution** | | | | | | |
| 6 Digit Sensus encoder module | 123456 x 1000 USG | 123456 x 1000 USG | 123456 x 100 CuFt | 123456 x 100 CuFt | 123456 x 1 M³ | 123456 x 1 M³ |
| 8 Digit Sensus encoder module | 12345678 x 10 USG | 12345678 x 10 USG | 12345678 x 1 CuFt | 12345678 x 1 CuFt | 12345678 x 10 L | 12345678 x 10 L |

### INSTALLATION

Lift the lid, using a small screwdriver blade, carefully remove the pulser clip.
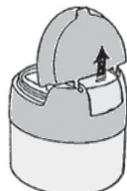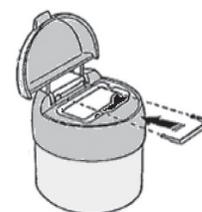
Remove the blank cover by lifting up...
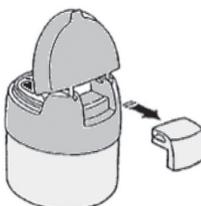
...and then slide out.
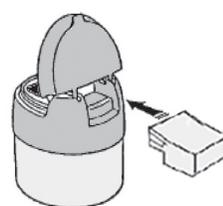
Fit the Encoder unit in the opposite manner to the cover removal.

Replace the securing clip (lugs uppermost).

**Warning:** Take care not to dislodge the rubber gasket on the underside of the unit when fitting / removing.

# evoQ₄ Electromagnetic Meter
## MX 42 VP Module – Pulse and Encoder Module

### Operation

The VP module for evoQ₄ combines a sensus protocol encoder channel and a high resolution pulse channel for use with both an AMR/I radio end point and typical industrial monitoring systems using the pulse input. Remote counters, PLC, and SCADA systems are typical.

Specify encoder resolution (6 digit or 8 digit).
Encoder connection types include three wire bare - for splicing to three wire radio endpoints, and Itron or Nicor connectors.

Bare wire cable function:
**Red:** Data
**Green:** V+ (power)
**Black:** V0 (ground)

Pulse resolution is fixed but depends on the units of registration of the meter to which the module is attached.

**USG:** 1 pulse = 1 USG
**CuFt:** 1 pulse = 0.1 Cuft
**M³:** 1 pulse = 1 Liter
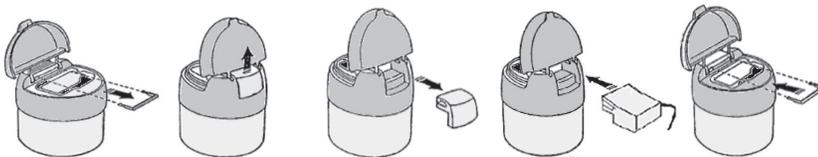
The pulse logic is fixed at Forward Net.
Reverse totalization will not cause an output, but reverse total is stored in a memory buffer. As forward flow resumes, The reverse total buffer will decrease until forward flow has equaled the buffer, in effect zeroing it out. The pulse train then resumes as normal with continued forward flow.

Pulse cable function:
**Green:** Pulse signal
**Black:** V0 (ground).

| SPECIFICATIONS | |
| --- | --- |
| Power source | 3 V Lithium battery (10 yr) |
| Environmental rating | NEMA 6P / IP68 |
| Operating temp. | 14 to 131ºF (-10 to 55 ºC) |
| Storage temp. | -4 to 140 ºF (-20 to 60 ºC) |
| Materials | ABS Resin |

| ENCODER | |
| --- | --- |
| Protocol | Sensus (specify 6 or 8 digit) |
| Encoder ID | 10 digit fixed |
| Connection | 25' cable with bare wire, Nicor or Itron connector |

| PULSE | |
| --- | --- |
| Pulse logic | Forward Net |
| Pulse weight | 1 pulse = 1 USG / 0.1 Cuft / 1 L |
| Max. pulse frequency | 100 hz |
| Min. pulse width | 5 ms |
| Signal type | Open drain FET |
| Connection | Bare wire 25' |
| Max. load current | 20mA |
| Max. load voltage | 30 VDC |

## INSTALLATION



Lift the lid, using a small screwdriver blade, carefully remove the pulser clip.
Remove the blank cover by lifting up…
…and then slide out.
Fit the Encoder unit in the opposite manner to the cover removal.
Replace the securing clip (lugs uppermost).

**Warning:** Take care not to dislodge the rubber gasket on the underside of the unit when fitting / removing.

### Find Out More

WaterMeters@honeywell.com
www.elsteramcowater.com

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